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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In Re Application of:

Applicants: : Robert Blake et al.  
Serial No. : 10/826,677  
Filing Date : April 16, 2004  
Title of Invention : BAR CODE SYMBOL READING SYSTEM EMPLOYING  
ELECTRONICALLY-CONTROLLED RASTER-TYPE LASER  
SCANNER FOR READING BAR CODE SYMBOLS DURING  
HANDS-ON AND HANDS-FREE MODES OF OPERATION  
Examiner : Ahshik Kim  
Group Art Unit : 2876  
Attorney Docket No. : 108-034USANB0

Honorable Commissioner of Patents  
and Trademarks  
Washington, DC 20231

**INFORMATION DISCLOSURE STATEMENT**  
**UNDER 37 C.F.R. 1.97**

Sir:

In order to fulfill Applicants' continuing obligation of candor and good faith as set forth in 37 C.F.R. 1.56, Applicants submit herewith an Information Disclosure Statement prepared in accordance with 37 C.F.R Sections 1.97, 1.98 and 1.99.

The disclosures enclosed herewith are as follows:

**U.S. PUBLICATIONS**

<u>NUMBER</u>	<u>FILING DATE</u>	<u>TITLE</u>
6,568,595 B1	August 19, 1998	SYSTEM AND METHOD FOR CARRYING OUT ELECTRONIC-COMMERCE TRANSACTIONS USING WEB DOCUMENTS EMBODYING ELECTRONIC-COMMERCE ENABLING APPLETS AUTOMATICALLY LAUNCHED AND EXECUTED IN RESPONSE TO READING URL- ENCODED SYMBOLS POINTING THERETO
5,945,659	August 13, 1997	ELECTROMAGNETICALLY ACTIVATED

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01 FC:1806 180.00 DA

		SCANNER WITH SUSPENDED SCANNER COMPONENT AND STOP
5,923,025	July 14, 1997	ELECTRO-MAGNETICALLY ACTIVATED SCANNER WITH SCANNER COMPONENT SUSPENDED BY SINGLE FLEXURAL COMPONENT
5,825,006	September 3, 1996	OPTICAL READER HAVING IMPROVED AUTODISCRIMINATION FEATURES
5,751,465	June 13, 1996	MINIATURE OPTICAL SCANNER FOR A TWO AXIS SCANNING SYSTEM
5,691,834	January 20, 1997	ULTRA COMPACT SCANNING SYSTEM FOR A WIDE RANGE OF SPEEDS, ANGLES AND FIELD DEPTH
5,665,954	January 22, 1996	ELECTRO-OPTICAL SCANNER MODULE HAVING DUAL ELECTRO-MAGNETIC COILS
5,661,290	February 7, 1996	SCANNER WITH FLEXIBLY SUPPORTED LIGHT EMITTER
5,600,119	October 13, 1995	DUAL LINE LASER SCANNING SYSTEM AND SCANNING METHOD FOR READING MULTIDEMENSIONAL BAR CODES
5,581,067	October 20, 1994	COMPACT BAR CODE SCANNING MODULE WITH SHOCK PROTECTION
5,543,610	April 15, 1994	COMPACT BAR CODE SCANNING ARRANGEMENT
5,478,997	November 25, 1992	SYMBOL SCANNING SYSTEM AND METHOD HAVING ADAPTIVE PATTERN GENERATION
5,412,198	November 8, 1991	HIGH-SPEED SCANNING ARRANGMENT WITH HIGH- FREQUENCY LOW-STRESS SCAN ELEMENT
5,373,148	September 10, 1992	OPTICAL SCANNERS WITH SCAN MOTION DAMPING AND ORIENTATION

		OF ASTIGMANTIC LASER GENERATOR TO OPTIMIZE READING OF TWO- DIMENSIONALLY CODED INDICIA
5,329,103	October 30, 1991	LASER BEAM SCANNER WITH LOW COST DITHERER MECHANISM
5,296,690	September 26, 1991	SYSTEM FOR LOCATING AND DETERMINING THE ORIENTATION OF BAR CODES IN A TWO-DIMENSIONAL IMAGE
5,280,165	April 14, 1992	SCAN PATTERN GENERATORS FOR BAR CODE SYMBOL READERS
5,262,628	June 8, 1992	NARROW-BODIED, SINGLE- AND TWIN- WINDOWED PORTABLE LASER SCANNING HEAD FOR READING BAR CODE SYMBOLS
5,262,627	November 16, 1993	SCANNING ARRANGEMENT AND METHOD
5,237,161	June 5, 1991	SYSTEM FOR AUTOMATICALLY READING SYMBOLS, SUCH AS BAR CODES, ON OBJECTS WHICH ARE PLACED IN THE DETECTION ZONE OF A SYMBOL READING UNIT, SUCH AS A BAR CODE SCANNER
5,224,088	February 10, 1992	HIGH RESOLUTION OPTICAL SCANNER
5,172,261	October 24, 1991	OSCILLATORY MIRROR DEVICE WITH TWO EXCITING MEANS
5,168,149	May 8, 1990	SCAN PATTERN GENERATORS FOR BAR CODE SYMBOL READERS
5,157,687	December 19, 1990	PACKET DATA COMMUNICATION NETWORK
5,124,537	October 29, 1990	OMNIDIRECTIONAL BAR CODE READER USING VIRTUAL SCAN OF VIDEO RASTER SCAN MEMORY
4,958,894	January 23, 1989	BOUNCING OSCILLATING SCANNING DEVICE FOR LASER SCANNING

## APPARATUS

4,794,239	October 13, 1987	MULTITRACK BAR CODE AND ASSOCIATED DECODING METHOD
4,717,241	June 11, 1985	LIGHT DEFLECTION DEVICE
4,632,501	February 16, 1984	RESONANT ELECTROMECHANICAL OSCILLATOR
4,619,498	March 27, 1984	SUSPENSION AND DRIVE METHOD AND CORRESPONDING DEVICE FOR OSCILLATING MIRROR IN SPACE TELESCOPE
4,387,297	February 29, 1980	PORTABLE LASER SCANNING SYSTEM AND SCANNING METHODS
4,063,287	February 23, 1976	TRACKING MIRROR DEVICE FOR A VIDEO DISC PLAYER
4,044,283	October 22, 1975	ELECTROMECHANICAL RESONATOR
3,919,527	July 26, 1973	OMNIDIRECTIONAL OPTICAL SCANNER
3,671,766	June 29, 1970	OSCILLATING MECHANISM
3,532,408	May 20, 1968	RESONANT TORSIONAL OSCILLATORS

## INTERNATIONAL PUBLICATIONS

EP 0 731 417 A2	February 27, 1996	SCAN MODULE FOR OPTICAL SCANNER
EP 0 615 207 A2	November 25, 1993	STAND-ALONG FIXTURE AND CONVERTING OPERATION OF HAND-HELD LASER

## TECHNICAL PUBLICATIONS

Scientific publication entitled "Laser Scanner Notebook" by Leo Beiser, SPIE Optical Engineering Press, November 1992, pages 1-20.

## **INTERNATIONAL SEARCH REPORTS**

### **App. No.**

### **Filing Date**

International Appln. No. PCT/US98/19488

December 4, 1998

European Appln. No. EP 98 94 9372

February 7, 2001

## **ABSTRACTS OF DISCLOSURE**

U.S. Patent No. 6,658,595 B1 to Russell et al. discloses an electronic-commerce enabling method and system, wherein an electronic-commerce enabling Java-Applet is embedded within an HTML-encoded document stored in an http server at a predetermined URL. When a code symbol (e.g. magstripe or bar code) encoded with the URL is read using a code symbol reader interfaced with a Java-enabled Internet terminal, the corresponding http document is automatically accessed and displayed at the terminal, and the electronic-commerce enabling Java-Applet initiated for execution so that the customer, consumer or client desiring to conduct an electronic-commerce transaction can simply and conveniently conduct electronic-commerce over the Internet. The electronic-commerce enabling Internet terminal can be in the form of an Internet kiosk installed in a public location, in the manner as conventional ATMs. By virtue of the present invention, universal transaction machine (UTMs) can be easily deployed for use by the mass population so that they can easily conduct various types of electronic-commerce over the Internet.

U.S. Patent No. 5,945,659 to Dvorkis et al. discloses high speed scanning arrangements in scanners for reading bar code symbols by oscillating a scanner component in a single line pattern, the scanner component being suspended from a flexural assembly for oscillating movement. A stop is operative for contacting the scanner assembly in the event that the arrangement is subjected to external shock forces.

U.S. Patent No. 5,923,025 to Dvorkis et al. discloses high speed scanning arrangements in scanners for reading bar code symbols by oscillating a scanner component in a single line pattern, the scanner assembly being suspended from a single flexural assembly for oscillating movement. The flexural assembly includes a flexure that lies in a plane extending through a central region of a scan mirror in a direction orthogonal to the plane of the mirror. A drive is operative for moving the scanner assembly from a rest position in a circumferential direction to one of two scan end positions. The flexural assembly is tensioned and stores energy, which energy is released in order to return the scanner assembly in the other circumferential direction to the other scan end position.

U.S. Patent No. 5,825,006 to Longacre, Jr. et al. discloses a method and apparatus for discriminating and decoding any of a plurality of 1D linear bar code symbols which use different 1D symbologies and of 2D matrix bar code symbols which use different 2D finder patterns and 2D symbologies. A processor stores a plurality of 1D decoding programs, a plurality of 2D decoding programs, and a parameter table that specifies which of said programs are to be enabled. During 1D autodiscrimination, the processor makes no attempt to decode unknown symbols in accordance

with 1D decoding programs that are not enabled. During 2D autodiscrimination, the processor makes no attempt to decode unknown 2D symbols in accordance with 2D decoding programs that are not enabled.

U.S. Patent No. 5,751,465 to Melville et al. discloses a miniature optical scanner which includes an electromagnetic drive having stationary magnets and stationary drive coils to minimize the rotational inertia of the scanner and increase the scanner's resonant frequency. The scanner is such that the resonant frequency is manually tunable as well as automatically adjustable to compensate for variables causing frequency drift. The optical scan angle is increased by employing a multiplying mirror with the optical scanner. For a two axis scanning system, the multiplying mirror may be formed of a second optical scanner to increase the optical scan angle relative to both of the axes.

U.S. Patent No. 5,691,834 to Plesko discloses a non-contact light beam scan system small enough to fit into a hand holdable wand, pen or calculator-sized terminal which incorporates a novel scan element which can scan at rates of ten to hundreds of scans per second in one or two dimensions. The device is immune to low frequency vibrations and can scan large angles of 60 degrees or more. Automatic trigger circuitry enables it to be used equally well in hand held or fixed mount applications. The depth of operating range is extended with a novel focal system which is integrated with the light source. The entire scanning system for generating a beam, focusing the beam electronically, scanning the beam, collecting light from a target and converting it into electrical signals, and automatically generating a trigger signal can work with industry standard low or high speed bar code decoders.

U.S. Patent No. 5,665,954 to Bard et al. discloses a scanner module for directing a light beam to scan an optically encoded symbol which includes a scanner component and a permanent magnet mounted for joint oscillatory motion on a support to scan the light beam by a flexible, resilient member having one end connected to the support, and an opposite end connected to a frame. This oscillatory motion is induced by the interacting magnetic fields established by the permanent magnet and an electromagnetic coil driven by an AC current. Bidirectional light beam scanning is achieved by an additional electromagnetic coil.

U.S. Patent No. 5,661,290 to Bard et al. discloses a mirrorless beam scanning unit to reduce the size and weight of an optical scanner. A flexible support structure, such as one or more strips of mylar, movably mounts the light emitter in response to a motive force, for example, as might be applied by a combination of a permanent magnet coupled to the light emitter and a fixedly mounted electromagnet driven by an alternating current signal. Reciprocation of the light emitter during emission of light by the light emitter causes the light to scan a surface, such as a surface bearing a bar code label.

U.S. Patent No. 5,600,119 to Dvorkis discloses a hand-held 2-D laser scanning bar code symbol reader employing a 2-D scanning mechanism, in which y-axis laser scanning control is introduced upon the automatic detection of a 2-D bar code symbol by the reader.

U.S. Patent No. 5,581,067 to Grosfeld et al. discloses, in Fig. 5 and in Column 4, a compact bar code scanning module, wherein a reflector 18 and magnet 174 are mounted to a U-shaped (e.g. leaf) spring 178 which is caused to oscillate in one or two directions in response to

signals supplied to an electromagnetic coil 172.

U.S. Patent No. 5,478,997 to Bridgelall et al. discloses a symbol scanning system which adaptively changes scanning parameters including light beam pattern and focus to improve barcode readability. The scanning system including: a scanner, responsive to coordinate control signals, for directing a light beam in a pattern at a symbol at a predetermined location, detecting a reflected portion of the light beam, and generating a feedback signal corresponding to the detected portion of the reflected light beam, a microprocessor, responsive to the feedback signal, for generating pattern control signals, and a pattern generator for generating the coordinate control signals in response to the pattern control signals and for determining the light beam pattern.

U.S. Patent No. 5,543,610 to Bard et al. discloses, in Fig. 1, and at Column 6, lines 64-67 and Column 7, lines 1-47, a finger-mounted laser scanning device comprising a flexural strip 12 of suitable flexible material, such as Mylar, which is cantilever mounted at one end between two halves of the base 14. The flexural strip 12 supports thereon a miniature permanent magnet 16 positioned inside a coil 18, with an axis passing centrally through the North and South poles of the permanent intersecting the surface of the flexural strip 12 substantially perpendicular thereto. As disclosed, by changing the dimensions (i.e. length, width and thickness) or the flexural characteristics of the cantilever mounted strip 12, or the mass of the cantilever mounted strip 12, the permanent magnet 16 and the mirror 20, or the distribution of mass on the flexural strip 12, different resonant frequencies can be established for the vibrating scanning assembly. In general, the natural resonant frequency is determined by the size (length, width and thickness) and flexural strength of the cantilever mounted member, the distribution of mass, and the total mass of the vibrating assembly. Formulas are available and are known in the art to determine the resonant frequency of the vibrating assembly, which can also be tested and developed empirically. When a periodic drive signal 22, such as a sinusoidal signal is introduced into the coil 18, the periodically reversing magnetic field induced thereby causes the cantilever mounted assembly to oscillate up and down, as shown in FIG. 1. This produces a linear scanning motion of the scan mirror 20, which causes a linear scanning of a beam directed onto the mirror by a suitable beam source such as a visible laser diode (VLD) 24. A sinusoidal periodic drive signal causes a periodically reversing magnetic field to be generated by the coil 18, thus creating moments of forces acting upon the North (N) and South (S) poles of the permanent magnet 18, to cause the magnet and the flexible strip 12 on which it is mounted, along with the scan mirror 20 (all of which comprise a cantilever mounted assembly) to vibrate up and down, perpendicular to the flat surface of the flexible strip 12, at a frequency dependent upon the frequency of the periodic drive signal. In general, and for all of the embodiments disclosed herein, it is desirable to drive a cantilever mounted assembly or a torsional mode mounted assembly with a periodic signal at or near the resonant frequency of the assembly, and to design the assembly with a natural resonant frequency as high as possible to achieve high scan rates of up to several hundred hertz (e.g. 500 Hz.) However, lower scan rates are also possible. In general, the chosen scan rate depends upon the particular application, and a 36 scans per second scan rate is typical, which is generated by a periodic signal of 18 Hz.

U.S. Patent No. 5,412,198 to Dvorkis discloses, in Fig. 2 and at Columns 6 and 7,, a typical scanning arrangement 200 for implementing a two-dimensional or two-axis scan pattern, comprising a holder 202 which incorporates a U-shaped spring 204 having a pair of arms 206 and 208. A scan element 210, such as a light reflector or mirror, is fixedly mounted at the free end of

the arm 208, while a permanent magnet 212 is mounted at the opposite free end of arm 206. An electromagnetic coil 214 is fixedly mounted on an upright support member 216, the latter of which is secured to a base 218. Electrical input leads 220 supply an energizing signal to the electromagnetic coil 214. The arm 206 and the permanent magnet 212 are secured to a generally planar spring member 222 at one end 222a thereof, and which has its other end 222b secured to the base 218. The planar spring 222 may be made of any suitable flexible material, such as a leaf spring, a flexible metal foil, or a flat bar. As disclosed, the holder 202 may also be made from any suitable metallic material possessing resilient or flexibility properties (e.g. a material such as a beryllium-copper alloy). The mass of the mirror 210, which may be equal to the mass of the permanent magnet 212 under certain instances, may be much higher than the equivalent mass of the U-shaped spring 204.

U.S. Patent No. 5,373,148 to Dvorkis et al. discloses, in Fig. 2 and at Column 2, a typical scanning arrangement 200 for generating a two-dimensional or two-axis scan pattern. As shown, the scanning arrangement comprises a holder 202 having a U-shaped spring 204 with a pair of arms 206 and 208. A scanning component, for example, a light reflector or mirror 210, is fixedly mounted at the free end of the arm 208. A permanent magnet 212 is attached to the opposite end of the holder 202, i.e. at the end of arm 206. An upright member 216, secured to base 218, supports an electromagnet 214 in close proximity to the permanent magnet 212. Electrical input leads 220 carry an energizing current or drive signal to the coil of electromagnet 214. The arm 206 and the permanent magnet 212 are secured to a generally planar spring member 222 at one end 222a thereof. The other end of the planar spring member 222 is secured to the base 218 by a suitable fastener. The mass of the mirror 210 may be equal to the mass of the permanent magnet 212, or in some cases the mass of the mirror may be much higher than the equivalent mass of the U-shaped spring 204. The planar spring 222 may be made of any suitable flexible material, such as a leaf spring, a flexible metal foil or a flat bar. Preferred embodiments discussed below use a flat strip of plastic material, such as Mylar (TM) or Kapton (TM), to form the planar spring. As disclosed, the holder 202 comprising the U-shaped spring structure 204, 206, 208 may be made from any suitable resilient or flexible metallic material, such as a beryllium-copper alloy.

U.S. Patent No. 5,329,627 to Rando discloses, in Fig. 6a and at Column 6, a drive mechanism for oscillating cantilever beams at a desired resonant frequency. As disclosed, a permanent magnet 32 is mounted on a cantilever beam 30 which is fastened to support 38. The magnet is attracted or repelled by coil 34 depending on the direction of the current. When the current through the coil 34 is alternating at or near the resonant frequency of the cantilever beam, a large oscillation results with a small amount of electrical power. A voltage is induced in coil 36 by the motion of the magnet. This voltage can be used to limit the drive to the driving coil 34 to maintain the desired amplitude of oscillation.

U.S. Patent No. 5,296,690 to Chandler et al. discloses a bar code reader which includes an image capture means for storing a two dimensional image in memory, which stored image may include a bar code symbol within the field of view of said image. The present bar code reader further includes method and apparatus for determining the location and orientation of said bar code symbol within the field of view of said image. And then filtering said located and oriented bar code symbol along an axis perpendicular to said detected orientation. Thereafter, the filtered bar code symbol is scanned and applied to a decoder to produce a decoded bar code output.

US Letters Patent No. 5,280,165 to Dvorkis et al. discloses, in Fig. 4 and at Column 8, a complex scanning arrangement which employs a U-shaped spring 110 having a reflector 116 attached to one end. A first planar spring 128 supports the U-shaped spring 110, at about the same location of magnet 118. As shown, an S-shaped spring 134 is connected to the middle portion of the first planar spring 123, and also second planar spring 142, and has a mass balance 140 affixed to the free end of the S-spring 134 beyond the second planar mirror 142. High and low frequency current signals are superimposed upon electromagnetic drive coil 120 and generate forces on magnet 118 and thus generate a two-dimensional or two-axis scanning pattern when a light beam is directed incident on the reflector 116 during scanner operation. As disclosed in Column 8, at lines 55-58, the high frequency current signal applied to drive coil 120 is frequency tuned to the resonant frequency of the U-shaped spring 110, whereas the first planar spring 128 is driven below its resonant frequency.

U.S. Patent No. 5,262,628 to Shepard et al. discloses a scanning head for reading bar code symbols which includes a laser source producing a beam which is scanned across a symbol to be read by a moving mirror arrangement, and a photodetector responsive to light reflected from the symbol. The signal from the photodetector is digitized and decoded to recover bar code data. The scanning head includes a keyboard for entering data, and a display from showing data, and a microprocessor in the head controls the operations of the various components. A transmitter and receiver may be located in the scanning head for communication with a central computer, and a battery included in the head as a power supply, so that the scanning head need not be connected by a cable to a terminal.

U. S. Patent No. 5,262,627 to Shepard discloses, in Figs. 4, 5 and 6 and at Column 8, a scanning arrangement which includes an upstanding support member 40 having a central portion in the shape of an elongate bracket 42 with extending generally L-shaped bent arms 44, 46 projecting from its opposite ends, each of the arm subtending an acute angle. The elongate generally rectangular bracket 42 is mounted on the printed circuit board 20 through the intermediary of suitable fasteners (not shown) extending through holes 47 formed in the ends of the bracket and engaging into threaded bores 48 of a trunnion 60 and includes an apertured central portion 48 for the swivable support of a post 50, as illustrated in Fig. 10, having a lower end extending through the board 20, as shown in Figs 8 and 9, positioned to extend across the lower surface of the printed circuit board 20. The post 50 includes a bracket member 52 to which there is fastened a suitable scan element 54, such as a flat scan mirror through fastener elements extending so as to be oscillatable about an axis y extending coaxially through the post. Fastened to the post 50 is a projecting arm member 70 having a magnet 72 mounted on the outer distal end 74 of the arm member. The magnet 72 is adapted to be electrically alternately attracted to or repelled from the interior of an electrically energized and electromagnetic coil structure 76. The coil structure 76 is mounted on the printed circuit board 20. As the magnet is moved into and out of an aperture in the coil, the arm member 70 and post 50 are oscillated, and the scan mirror 54 is imparted with a reciprocating oscillatory movement.

U.S. Patent No. 5,237,161 to Grodevant discloses a bar code label read by automatically initiated scanning of the bar code symbol by a scanner on a stand.

U.S. Patent No. 5,224,088 to Atiya discloses, in Fig.1 and at Column 1, a flexible cantilever 1 which is rigidly attached to a stationary support 2. Cantilever 1 carries a lens 3,

mounted parallel to the material being scanned 7. A mirror 4 rigidly mounted to the cantilever at a point about 20% of its length as measured from the fixed end of the cantilever. The incoming light beam 6 is reflected by mirror 4 towards the free end of the cantilever. A second mirror 5 deflects the light beam towards lens 3, which in turn focuses it on material 7. By the way of example, material 7 can be optical data storage tape or an optical memory card. The scanner can be used as its resonant frequency by making beam 1 from a ferromagnetic material and using electromagnetic 9 to excite beam 1 into resonance. When electromagnet 9 is driven from an alternating current source 10 having a frequency of exactly one half of the resonant frequency of the cantilever, the cantilever will resonate and very low power will be required to keep it scanning.

U.S. Patent No. 5,172,261 to Kato et al. discloses an oscillatory mirror device having a mirror and a pair of exciting systems to exert a couple of forces to turn the mirror around an axis of oscillation in an oscillating manner.

U.S. Patent No. 5,168,149 to Dvorkis et al. discloses, in Figs. 6a and 6b and at Column 10, a single planar spring 150 which provides oscillatory movement in two orthogonal axes for generating a raster-type scan pattern. The spring 150 is mounted to base 152 and has mounted on it the light reflector 154. A magnet 156 is mounted to the spring 150 on the opposite side as that of the reflector 154. An electromagnetic coil 158 having a passage 160 is mounted adjacent the permanent magnet 156 on an upright bracket member 162 that is in turn mounted to base 152. As shown in Fig. 6b, an axis 164 is formed by the magnet 156 and coil 158 which runs through the center of spring 150. The light reflector 154 is mounted to the planar spring 150 with its center of gravity 166 offset from axis 164.

U.S. Patent No. 5,157,687 to Tymes discloses a packet data transmission system used to link a number of remote handheld data-gathering units such as bar code readers to a central computer which maintains a database management system. Data packets are sent from the remote units by an RF link to intermediate base stations, then sent by the base stations to the central computer by a serial link. Direct sequence spread spectrum modulation is used for the RF link. The remote hand-held units initiate an exchange using RF transmission to and from the base stations, receiving only during a rigid time window following a transmission from the remote unit. The base stations cannot initiate communication to the remote units, but instead send data to the remote units only as part of the exchange.

U.S. Patent No. 5,124,537 to Chandler et al. discloses an omnidirectional bar code reader which uses a virtual scan of raster scan digital image memory to create the equivalent scanning pattern of a mechanical laser scanner. A two dimensional image of a bar code symbol at any random orientation is captured in a memory. In one embodiment, the image memory is scanned to create a virtual scan equivalent to the scan pattern of a laser scanner. In another embodiment, the image memory is divided into plurality of memory segments, and simultaneous virtual scan is provided in each of the respective memory segments. In yet another embodiment, the memory is divided into a plurality of overlapping memory segments and simultaneous virtual scan is provided in each of the respective overlapping memory segments. The overlap between the memory segments is made large enough so that a bar code symbol of the expected size will be entirely included in one or the other of the overlapping memory segments. Thus, the boundary problem between memory segments is resolved and it is not necessary to concatenate partial scans between adjacent memory segments. The segmented scan may be achieved using an interleaved

memory storage arrangement.

U.S. Patent No. 4,958,894 to Knowles discloses, in Fig. 1 and at Column 4, a laser scanning device comprising a light reflector 28, oscillatory motor 30, and mounting structure 32. The reflector 28 comprises a concave mirror 34 mounted on a pivot arm 36 which, in turn, is mounted on the mounting structure 32 at the locations of the pivot axis 24.

U.S. Patent No. 4,794,239 to Allais discloses a multitrack bar code and associated decoding method. Data are encoded into a multitrack bar code according to numerical values which correspond to the characters composing the data. The numerical values are combined into words and corresponding binary strings are chosen, the parity of each binary string being chosen according to the order of the row being encoded. Each row also includes a row check character, and the first row contains a character which checks the number of rows encoded and a data check sum on the data character values. If desired, column check sums can also be computed on each of the data-bearing rows in the multitrack bar code. The multitrack bar code can be encoded according to a numeric shift code when strings of numeric data of at least eight decimal digits are encountered. An alphanumeric shift character causes the multitrack bar code to return to the alphanumeric mode.

U.S. Patent No. 4,717,241 to Aagano discloses, in Fig. 1 and at Column 2, a device which comprises a cantilever 1, a light deflecting element 2 disposed near the fixed end 1a of the cantilever, and near the free end 1b a deflection means 3 for imparting the required amount of deflection. The cantilever 1 is formed in the shape of a round bar or flat strip, one end 1a of which is free. A metal such as phosphor bronze or the like is a suitable material for the cantilever, but any material may be used which possesses the resilience required of a cantilever. The light deflecting element 2 is affixed near the fixed end 1a of the cantilever via a support member 2a, and therefore inclines in accordance with the deflection of the cantilever 1 applied near the free end 1b of said cantilever. As the light deflecting element 2 can be used any element that provides a deflection of the light path as it inclines with the deflection of the cantilever. In the embodiment shown in Fig. 1 a half-mirror is employed, but a prism may also be used, as shown in Fig. 2. In Fig. 2, 1c is a hole formed in the cantilever 1 to allow the passage of light therethrough.

U.S. Patent No. 4,632,501 to Glynn discloses, in Figs. 1-9, and at Column 2, a resonant electromechanical oscillator, wherein a planar mirror 14 is supported for oscillation above base 16 by a flexible sheet-form spring steel cantilever suspension 18. Base 16 is an aluminum investment casting having a flange portion 20 and holes 22 for receiving mounting fasteners.

U.S. Patent No. 4,619,498 to Croiset discloses a method and a device for suspending and driving into oscillation a space telescope oscillating mirror connected to a support whereby angular motions of the oscillating mirror around an oscillation axis are controlled from an auxiliary mass which is adapted to oscillate around said oscillation axis, and potential energy is momentarily stored, for example in elastic form, when said oscillating mirror and said auxiliary mass come close in opposed phase to respective extreme angular positions. These oscillating mirror and auxiliary mass are preferably connected to the common support through flexible rods bound to said support. Dynamic oscillations in the support are thus minimized so as to allow precise observation in two neighboring directions, particularly for celestial scanning.

U.S. Patent No. 4,387,297 to Swartz et al. discloses, in Fig. 15a, a penta-bimorph scanning element generally identified by reference numeral 250. The penta-bimorph 250 is a miniature, high-speed scanning element which can replace either the X-axis scanning element 68, or the Y-axis scanning element 70, or both. The penta-bimorph 250 comprises a pair of bimorphs 252, 254 which are ferro-electric-type oscillating elements which reciprocally oscillate when voltages are applied thereto. At their lower ends, the bimorphs are mounted on a grounded support structure 256. At their upper ends, light-reflecting mirrors 262, 264 are mounted on the bimorphs such that they include a 45° angle between their reflecting surfaces. Wedge-shaped blocks 258, 260 are mounted between the mirrors and the bimorphs to properly position the mirrors at the aforementioned angle.

U.S. Patent No. 4,063,287 to van Rosmalen discloses, in Fig. 1 and at Column 4, a tracking mirror device for a video disc player, wherein drive coil 16 in conjunction with permanent magnet 17 causes the oscillating tracking mirror 8 to oscillate at its resonant frequency.

U.S. Patent No. 4,044,283 to Allison discloses, in Fig. 4 and at Columns 3-4, an electromechanical resonator comprising a frame 10 supporting a torsionally resonant system 12 and a flexurally resonant system 14 which are operatively joined to a nodal zone member 16. The flexurally resonant system 14 comprises a pair of flexure elements or spring arms 40 and 42, formed as a unitary flat leaf spring which is fixed at its median portion 44 to the upper end of a post or pedestal portion 46 of the nodal zone member 16. The leaf spring is constructed from a material, such as a nickel-iron alloy, which has a substantially constant elastic modulus with temperature changes and is highly resistant to fatigue. Each of the spring arms 40 and 42 of the flexurally resonant system 14 is tuned to have a natural frequency of vibration in the flexure mode which is equal to the resonant frequency of the torsionally resonant system 12.

U.S. Patent No. 3,919, 527 to Bowen et al. discloses, in Fig. 1 and at Column 4, an omnidirectional optical scanner, wherein torsional deflectors 20 and 25 are driven from a system clock 101. The frequency of system clock 101 is dependent upon the desired phase lock accuracy because a correction is made only when the phase error exceeds one cycle of the system clock.

U.S. Patent No. 3,671,766 to Howe discloses, in Fig. 4 and at Column 1, an oscillating mechanism in which cantilever springs 15 and 17 extend from opposed ends of an oscillating element 11, and magnetic coils 19 and 21 are provided at opposed ends of the element 11 and in operative spaced relation thereto. Magnetic devices 19 and 21 are provided with coils 23 and 25 appropriately connected to an electrical circuit or power source 27, 27. The cantilever springs 15 and 17 contain contacts to engage abutments 29 and 31 during element oscillation. In operation, closure of the one of the contacts against abutments 29 or 31 causes current to flow to ground from power source 27 energizing the appropriate magnetic device, for example, as shown in the drawing, device 19 opposite the contact 31. The magnetism thus created in device 19 attracts the related end of the oscillating element 11 bringing it downwardly until contact 29 is engaged by the contact on cantilever spring 15. This engagement accomplishes two facets, that is, it energizes magnetic device 21 and also stores the kinetic energy of the oscillatory motion of the element 11 in the spring 15. The release of this energy from the spring coupled with the magnetic attraction set up at the device 21 induces movement of the oscillating element 11 in the opposite direction.

U.S. Patent No. 3,532,408 to Dostal discloses, in Fig. 4 and at Column 3, a resonant

torsional oscillator which comprises a torsion member 10, bridged across a channel-like frame 11 having parallel side walls 12 and 13, which may be fabricated of aluminum or other light-weight high-strength metal. Centrally mounted upon torsion member 10 supports a mirror or reflector 14, such that in operation, the reflector is caused to vibrate about the longitudinal axis of the torsional member, thereby periodically deflecting a light or other beam of radiant energy impinging thereon at a rate determined by the resonance characteristic of the oscillator.

European Publication No. EP 0 731 417 A2 by Symbol Technologies, Inc. discloses an integrated optical module for an optical scanner which has a lens spaced from a vertical-cavity surface-emitting laser (VCSEL) by a spacer. The module, in an alternative embodiment, may include a wafer frame, a suspended mirror mounted for oscillation on the frame, a wafer substrate bonded beneath the frame and a wafer cover bonded above the frame. The cover includes a mirror travel stop to protect the mirror against shock. A VCSEL mounted to the wafer cover produces a beam which is shaped and deflected by a diffractive optical element onto the oscillating mirror. The reflected beam passes out of the module toward an indicia to be read. Large numbers of such devices may be fabricated relatively cheaply using wafer-scale processing and assembly technology. Three large wafers are fabricated corresponding respectively to arrays of substrates, frames and covers. The large wafers are bonded together in a sandwich arrangement, and are then diced to produce the individual scan modules. The modules may provide either one-dimensional or two-dimensional scanning.

European Publication No. EP 0 615 207 A2 by Symbol Technologies, Inc. discloses a trigger-operated or triggerless scanner reads symbols with a first scan pattern in a first intended position of hand-held use. Either scanner may be mounted on a stand-alone fixture wherein the first scan pattern is converted to a second, different scan pattern, again for reading indicia in a second intended position of workstation use. Various signal processing digitizing circuits for faithful digital reconstruction of the symbols are disclosed.

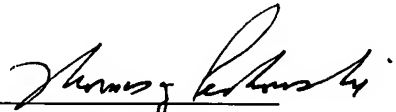
The Scientific Article entitled "Laser Scanning Notebook" by Beiser is a compendium of the series of reference articles initiated in the March 1991 issue of SPIE's OE Reports, and pertains to the fundamentals in optics, electronics, mechanics and physics.

A separate listing of the above references on PTO Form 1449 and a copy of all non-patent references are enclosed herewith for the convenience of the Examiner.

The Commissioner is hereby authorized to charge the requisite fee of \$180.00 to Deposit Account 16-1340. A copy of this page is enclosed herewith.

Respectfully submitted,

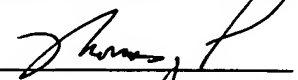
Dated: October 21, 2005

  
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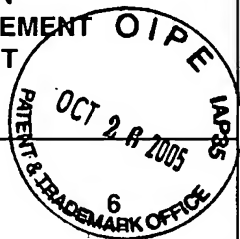
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Thomas J. Perkowski, Esq.  
Reg. No. 33,134  
Date: October 21, 2005

Substitute for form 1449A/PTO

**INFORMATION  
DISCLOSURE STATEMENT  
BY APPLICANT**



Sheet

1

of

**Complete If Known**

Application Number	10/826,677
Filing Date	April 16, 2004
First Name Inventor	Robert Blake et al.
Group Art Unit	2876
Examiner Name	Ahshik Kim
Attorney Docket Number	108-034USANB0

**U.S. PATENT DOCUMENTS**

Examiner Initials	Cite No.	U.S. Patent Documents		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Intn'l Class / Sub Class
		Number	Kind Code (if known)			
		6,568,595		Russell et al.	05/27/2003	G06N 7/10
		5,945,659		Dvorkis et al.	08/31/1999	G06K 7/10
		5,923,025		Dvorkis et al.	07/13/1999	G06K 7/10
		5,825,006		Longacre, Jr.	10/20/1998	G06K 7/10
		5,751,465		Melville et al.	05/12/1998	G02B 26/08
		5,691,834		Plesko	11/25/1997	G02B 26/08
		5,665,954		Bard et al.	09/09/1997	G06K 7/10
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		5,581,067		Grosfeld et al.	12/03/1996	G06K 7/10
		5,543,610		Bard et al.	08/06/1996	G06K 7/10

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Examiner Initials	Cite No.	U.S. Patent Documents		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Intn'l Class / Sub Class
		Number	Kind Code (if known)			
		5,478,997		Bridgelall et al.	12/26/1995	G06K 7/10
		5,412,198		Dvorkis	05/02/1995	G06K 7/10
		5,373,148		Dvorkis et al.	12/13/1994	G06K 7/10
		5,329,103		Rando	07/12/1994	G02B 26/08
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		5,157,687		Tymes	10/20/1992	H04K 1/00

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Examiner Initials	Cite No.	U.S. Patent Documents		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Intn'l Class / Sub Class
		Number	Kind Code (if known)			
		5,124,537		Chandler et al.	06/23/1992	G06K 7/10
		4,958,894		Knowles	09/25/1990	G02B 26/10
		4,794,239		Allais	12/27/1988	G06K 7/10
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		4,632,501		Glynn	12/30/1986	G02B 26/10
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		4,387,297		Swartz et al.	06/07/1983	G06K 9/24
		4,063,287		van Rosmalen	12/13/1977	H04N 5/76
		4,044,283		Allison	08/23/1977	H02K 33/00
		3,919,527		Bowen et al.	11/11/1975	G06K 7/10
		3,671,766		Howe	06/20/1972	H02k 33/18
		3,532,408		Dostal	10/06/1970	G02b 17/00

**PUBLICATIONS**

Examiner Initials	Cite No.	Description
		Scientific publication entitled "Laser Scanner Notebook" by Leo Beiser, SPIE Optical Engineering Press, November 1992, pages 1-20.

**PUBLICATIONS**

Examiner Initials	Cite No.	Description
		International Appln. No. PCT/US98/19488, 1998
		European Appln. No. EP 98 94 9372, 2001

FOREIGN PATENT DOCUMENTS								
Examiner Initials		Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Intr'l Class / Sub Class	T *
		Numbe r	Kind Code (if known)					
		EPO	0 731 417 A2		Symbol Technologies, Inc., Bohemia, NY	11/09/1996	G06K 7/10	
		EPO	0 615 207 A2		Symbol Technologies, Inc., Bohemia, NY	11/25/1993	G06K 7/10	

**EXAMINER**

**DATE CONSIDERED**

**EXAMINER:** Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance not considered. Include copy of this form with next communication to applicant.

(INFORMATION DISCLOSURE STATEMENT – SECTION 9 PTO-1449)